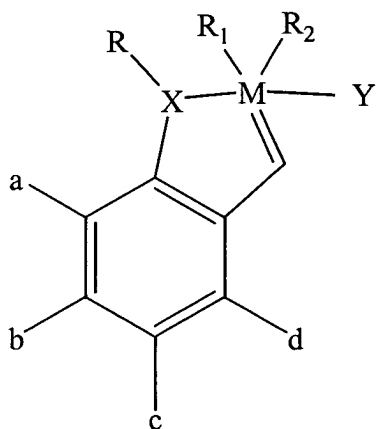


LISTING OF THE CLAIMS

The following listing of the claims will replace all prior versions and all prior listings of the claims in the present application.

1. (Previously Presented) A composition comprising a transition metal catalyst having the following structure:



wherein:

M comprises a transition metal;

R comprises an alkyl, alkenyl, alkynyl, aryl, alkoxy, alkenyloxy, alkynyloxy, aryloxy, alkoxy carbonyl, alkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl; each optionally substituted with an alkyl, halogen, alkoxy, aryl or heteroaryl moiety;

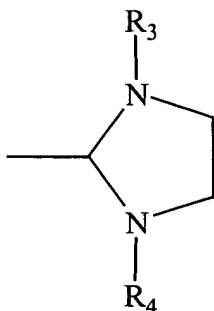
R₁ and R₂ each comprises or together comprise, an electron withdrawing anionic ligand;

a, b, c, and d each comprise H, a halogen atom or an alkyl, alkenyl, alkynyl, aryl, alkoxy, alkenyloxy, alkynyloxy, aryloxy, alkoxy carbonyl, alkylamino, alkylthio, alkylsulfonyl; alkylsulfinyl; each optionally substituted with an alkyl, halogen, aryl or heteroaryl moiety;

X is oxygen, sulfur, nitrogen or phosphorus; and

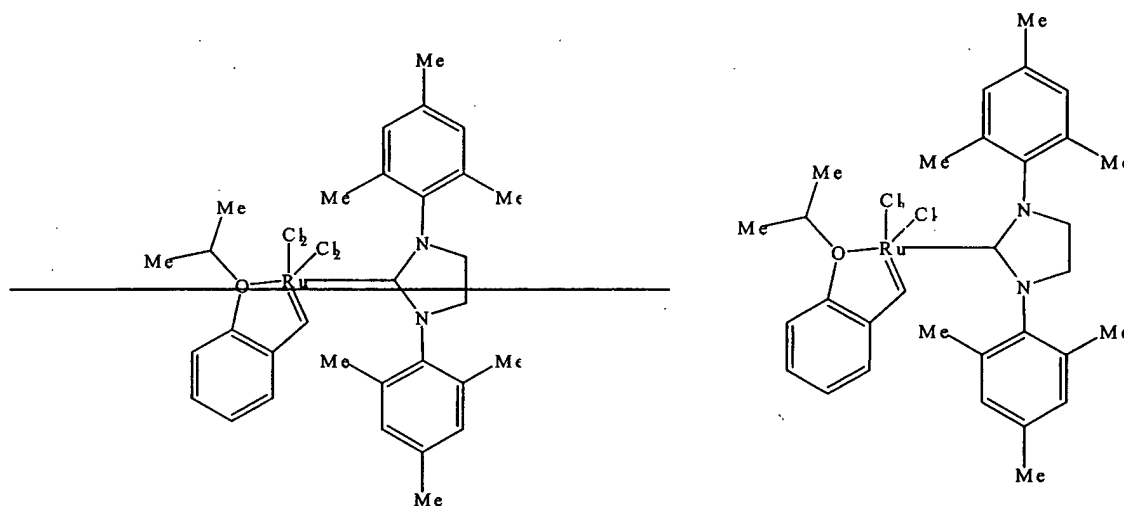
Y comprises an electron-donating heterocyclic carbene ligand.

2. (Previously Presented) The composition of claim 1 wherein M is Ru.
3. (Previously Presented) The composition of claim 1 wherein X is O.
4. (Previously Presented) The composition of claim 1 wherein R is a lower alkyl group.
5. (Previously Presented) The composition of claim 4 wherein R is isopropyl.
6. (Previously Presented) The composition of claim 1 wherein R₁ and R₂ each is a halogen.
7. (Previously Presented) The composition of claim 6 wherein R₁ and R₂ each is Cl.
8. (Previously Presented) The composition of claim 1 wherein a, b, c, and d each comprises H or a lower alkyl group.
9. (Previously Presented) The composition of claim 1 wherein Y comprises a 4,5-dihydroimidazol-2-ylidene.
10. (Previously Presented) The composition of claim 9 wherein Y comprises a tricyclic aromatic ring structure having the following structure:

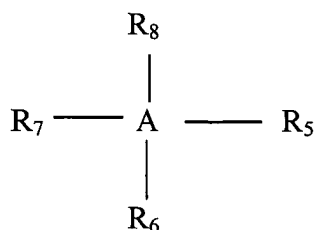


wherein R_3 and R_4 each comprises an aromatic ring moiety.

11. (Previously Presented) The composition of claim 10 wherein R_3 and R_4 both comprise 2,4,6-trimethylphenyl (mesityl) moieties.
12. (Currently Amended) The composition of claim 1 comprising the following structure:

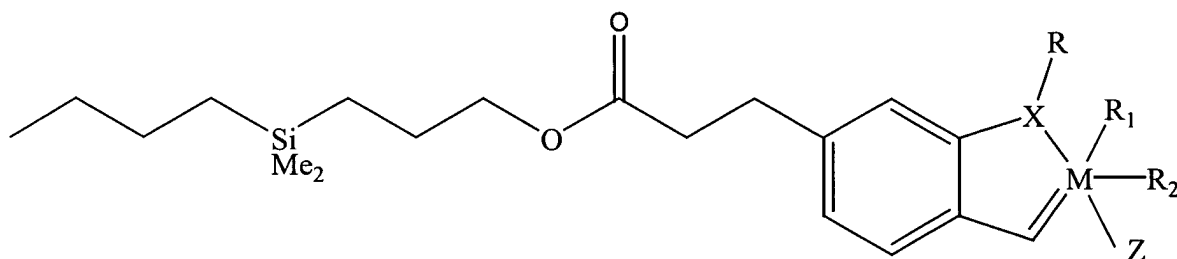


13. (Previously Presented) A composition of claim 1 wherein the transition metal catalyst is part of a dendrimer compound.
14. (Previously Presented) The transition metal catalyst of claim 13 having the following structure:



wherein A is a polyvalent atom selected from the group consisting of carbon, nitrogen, silicon and phosphorous;

R₅, R₆, R₇ and R₈ each comprises the following structure:



wherein:

M comprises a transition metal;

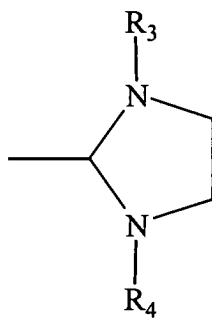
X comprises O, S, N or P;

R comprises an alkyl, alkenyl, alkynyl, aryl, alkoxy, alkenyloxy, alkynyloxy, aryloxy, alkoxy carbonyl, alkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl; each optionally submitted with an alkyl, halogen, aryl or heteroaryl moiety;

R₁ and R₂ each comprises, or together comprise, an electron withdrawing group; and

Z comprises Y or a phosphine group.

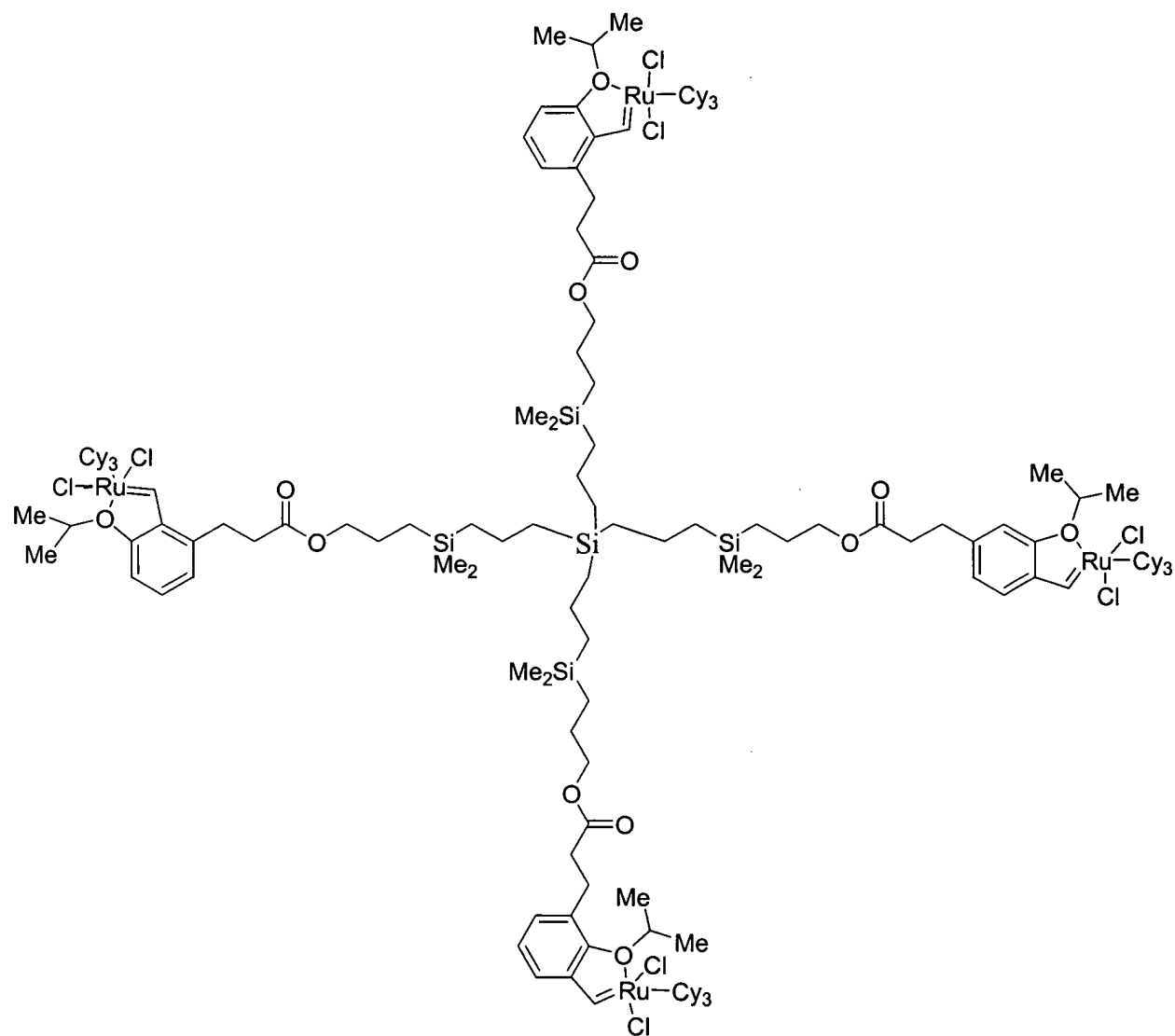
15. (Previously Presented) The composition of claim 14 wherein A is silicon.
16. (Previously Presented) The composition of claim 14 wherein M is a transition metal selected from the group consisting of ruthenium, osmium and tungsten.
17. (Previously Presented) The composition of claim 14 wherein M is ruthenium.
18. (Previously Presented) The composition of claim 14 wherein X is O.
19. (Previously Presented) The composition of claim 14 wherein R is a lower alkyl group.
20. (Previously Presented) The composition of claim 19 wherein R is isopropyl.
21. (Previously Presented) The composition of claim 14 wherein R₁ and R₂ each is a halogen.
22. (Previously Presented) The composition of claim 21 wherein R₁ and R₂ each is Cl.
23. (Previously Presented) The composition of claim 14 wherein Z comprises a phosphine moiety having the formula P(Cy)₃.
24. (Previously Presented) The composition of claim 23 wherein Cy comprises an aliphatic ring structure.
25. (Previously Presented) The composition of claim 23 wherein Cy comprises a cyclohexyl or cyclopentyl group.
26. (Previously Presented) The composition of claim 14 wherein Z comprises an aromatic ring structure having the following structure:

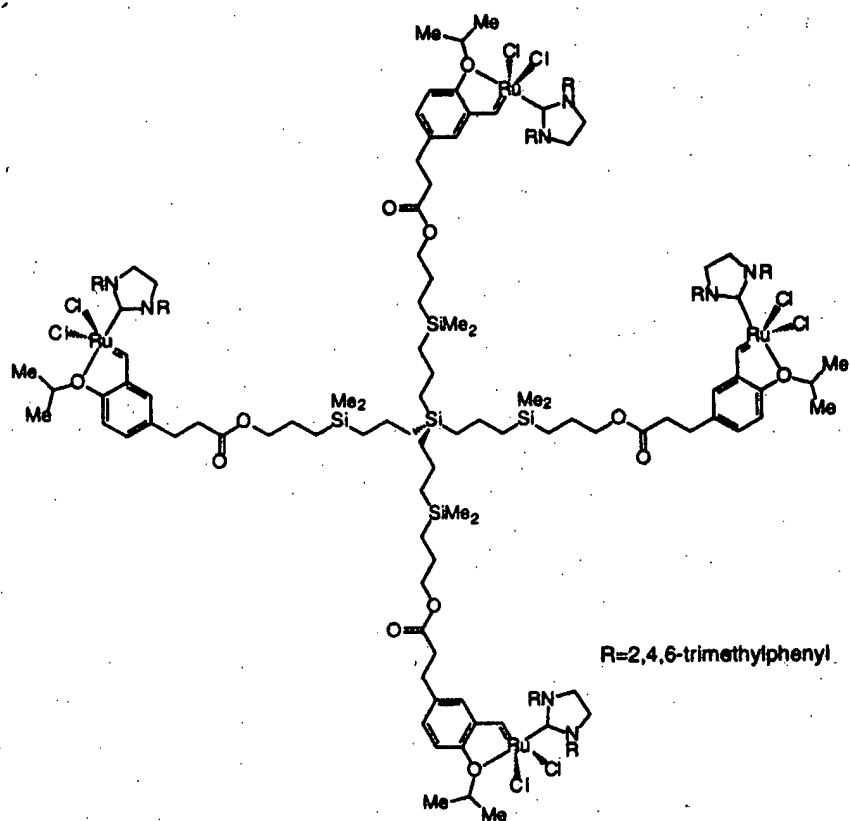


wherein: R₃ and R₄ each comprises an aromatic ring moiety.

27. (Previously Presented) The composition of claim 26 wherein R₃ and R₄ each comprises 2, 4, 6-trimethylphenyl (mesityl).

or





29-48. (Canceled).